

AVIATION

MARCH 12, 1923

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The La Cierva helicopter which recently rose to a height of 80 ft. near Madrid

(a) Kadel & Herbert

VOLUME
XIV

SPECIAL FEATURES

Number
11

VALUE OF GLIDERS TO AIR PROGRESS
ARE HUGE AIRCRAFT CARRIERS WORTH WHILE?
SEAPLANES—PRESENT STATUS OF THE QUESTION
AN OPTICAL ALTITUDE INDICATOR FOR NIGHT LANDING

THE GARDNER, MOFFAT CO., Inc.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK



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MARCH 12, 1923

AVIATION

VOL. XIV, NO. 11

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THOMAS-MORSE AIRCRAFT CORPORATION

CONTRACTORS TO U. S. GOVERNMENT

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NEW YORK

MEASURING UP TO A FAMOUS NAME

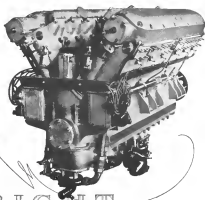
BACK of the name "Wright" lies the nineteen-year-old tradition to bring to the advancement of flying only the highest engineering principles and experience.

Accurately measuring the several phases of progress through which aviation has passed are the milestones of Wright Achievement covering the period of these nineteen years.

Only with a production organization capable of interpreting this wide engineering experience in terms of quality product could this company feel that it truly represented the impulse and high ideals of its founders.

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AVIATION

Vol. XIV

MARCH 12, 1923

No. 12

Defenseless in the Air

IF ever we were defenseless, what would we do for security? This question is not long asked by the aircraft industry but by the War Department. It is not even to make a misstatement apply to the question which answers one of the most important problems of national defense.

There are now three possible methods of attack from enemy aircraft: by air, by sea and by land. Under modern conditions of warfare an attack by air is so much more probable than any other kind that it has been considered as the first stage of hostilities by practically every country. As the most vulnerable parts of the country are within easy reaching range of our borders, our defenseless condition against air attack becomes apparent.

In case war were declared within the next year, neither the Navy nor the Army with their present equipment could meet a modern enemy air force with the hope of defeating it. Blue prints and experimental aircraft would only constitute a potential force that would become effective in six months or a year, and only at the producing plants assumed intact. The problem is even to the detriment of the possibility of any nation because it feels that the United States is so far from being attacked and so well defended that no country would ever attack our mainland. This is probably true.

But we have the Panama Canal, we have Mexico, the Philippines and Alaska which require attention in all parts of the world. Therefore our Navy could be relied upon to lay hold on both Germany in all questions affecting American rights and honor. It is probable that a country would choose to plan for a conflict and that would be where our aircraft would operate with the greatest efficiency against our naval and military forces—assuming that our air forces are undeveloped in this line of power.

Without us there is no air; our aircraft are useless, and troops cannot be transported in the face of aerial opposition. Confounded in this situation, the American foreign policy will have to be modified to meet an important question in the air. Hereafter a naval or military demonstration would have prompt effect, but without an effective air force no further strength would only be an exposure of weakness.

The answer to the question of the War Department is an adequate standing air force, proportionate in potentiality to our Army and Navy. This does not mean an air service, something to be paid out of the military and naval appropriations. It means that here is a place where a dollar spent for preparation will save thousands which would have to be spent in an emergency.

That the equipment of a standing air force would be up to the latest requirements in engineering development is not possible in the air any more than it is on the sea. Aircraft,

like seaweed, start to be obsolete the day they are constructed. But an air force of pursuit, bombardment and attack ready to operate at the start of hostilities is essential even if some of the ships are a year or two behind the latest commercial types. A navy cannot be built after war is declared, and likewise an air force cannot be trained and equipped in time to be effective unless there is at least a force strong in numbers to act as our first line of defense.

A For-Strong Plan

THE new project of the British air ministry whereby all British aircraft would be operated by a single corporation, adequately financed and being exempt of continuing contracts for the duration of ten years, is the latest striking illustration of the importance commercial aviation has assumed since the war.

The plan of the British government is concrete in the extent of about 10,000,000 with a gradually increased transport capacity in five years, heavily a scheme designed in France with a view to simplifying the present disjointed efforts of half a dozen aircraft companies. In France the principle of the ten year concession is already accepted in principle, and it is now suggested that a thirty year period may be required to make the air transport free "to the taxpayer."

The whole question of aircraft includes not only more aircraft in this country, and it is also being asked which would not afford American companies against which it might build up commercial aviation in the United States more quickly and at a lower cost than our other forms of production.

An industry which has commercial aviation would probably be as important as such is in the shipping industry, for the latter would have greatly benefited our coastal operations, whereas in our industry would be the advantage it must every nation of the world.

American Entries in the Schneider Race

THE news that the National Aeronautics Association has entered three airplanes in behalf of the United States Navy in the forthcoming Schneider Cup race, the European airplane speed contest, will be welcomed by all who are eager to see American aircraft participate in foreign contests.

Aircraft, which has been advancing with a course for the past three years, is particularly gratified by the Navy's public statement and hopes that American shipping and aviation will come out with flying colors from this international exhibition of airplane rivalry.

if it necessary to use larger diameter than would be the case for the land machine propeller. This again results in the machine being increased weight of design to give the required clearance and the large propeller diameter hampers setting non-orthogonal conditions to horizontal intervals.

In one respect the large diameter and low pitch of the propeller are no disadvantages and as will be noted from the curves it results in an improved climb after the machine has left the water.

The question could be dealt with in two ways—one by the variable pitch propeller or which experiment is now taking place. Once control on the pitch was such improved results could be obtained and greater loads lifted for a given power. An alternative, and somewhat easier solution, would be the provision of a two-speed gear on the engine, the gear ratios being arranged so as to give maximum engine revolutions under two conditions (1) at lamp speed for the smallest (2) at maximum at cruising speed according to which two desired

This is a feature I have been advocating for some time and I would take this opportunity to impress upon engine designers the urgent need of this feature for engine work. It would seem that an engine fitted with an automatic gear would be particularly adaptable for this purpose as it would avoid the necessity of a clutch or gear-changing mechanism. The alternative gear could be engaged by means of a brake

CHARACTERISTICS OF SOME MODERN SEATPLANES

Type	Control	Control Load	Control Weight	SP1 kg. lbs.	SP2 mg. g.
Stress Engine	10	10	10	10.5	5.8
Stress Engine	2000	2000	2000	20.5	11.6
Stress Engine	4000	4000	4000	41.0	23.2
Stress Engine	6000	6000	6000	61.5	34.8
Stress Engine	8000	8000	8000	82.0	46.4
Stress Engine	10000	10000	10000	102.5	58.0

Date	Group #	PILING ROUTE		Sawtooth length	BT / sq ft	BT sq ft
		Van	Day Type			
Supermarket Schedule						
Jan 6, 1997 (1997)	0711	450	1120	34	8.8	
Shower	1000	1754	1773	45	11	1.0
Driver	1010	1240	1400	42	10.8	

[illegible]

Type	Tall Plant—Single Spr. Type		Dwarfed Spr. Type		St. / Sp. #	St. sp. R.
	Even-ol. #	Even-ol. #	#	%		
200	1000	100	707	68.7	140	0.4
250	1000	400	600	60.0	170	0.5
300	1000	1000	1000	100.0	220	0.6
350	1000	1000	1000	100.0	250	0.6
400	1000	1000	1000	100.0	300	0.8

PLANT REPLACES

Year	From 1970 to 1979	From 1980 to 1989	From 1990 to 1999	2000 to 2009	2010 to 2019	2020 to 2029
1970	100	100	100	100	100	100
1971	100	100	100	100	100	100
1972	100	100	100	100	100	100
1973	100	100	100	100	100	100
1974	100	100	100	100	100	100
1975	100	100	100	100	100	100
1976	100	100	100	100	100	100
1977	100	100	100	100	100	100
1978	100	100	100	100	100	100
1979	100	100	100	100	100	100
1980	100	100	100	100	100	100
1981	100	100	100	100	100	100
1982	100	100	100	100	100	100
1983	100	100	100	100	100	100
1984	100	100	100	100	100	100
1985	100	100	100	100	100	100
1986	100	100	100	100	100	100
1987	100	100	100	100	100	100
1988	100	100	100	100	100	100
1989	100	100	100	100	100	100
1990	100	100	100	100	100	100
1991	100	100	100	100	100	100
1992	100	100	100	100	100	100
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1998	100	100	100	100	100	100
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2000	100	100	100	100	100	100
2001	100	100	100	100	100	100
2002	100	100	100	100	100	100
2003	100	100	100	100	100	100
2004	100	100	100	100	100	100
2005	100	100	100	100	100	100
2006	100	100	100	100	100	100
2007	100	100	100	100	100	100
2008	100	100	100	100	100	100
2009	100	100	100	100	100	100
2010	100	100	100	100	100	100
2011	100	100	100	100	100	100
2012	100	100	100	100	100	100
2013	100	100	100	100	100	100
2014	100	100	100	100	100	100
2015	100	100	100	100	100	100
2016	100	100	100	100	100	100
2017	100	100	100	100	100	100
2018	100	100	100	100	100	100
2019	100	100	100	100	100	100
2020	100	100	100	100	100	100
2021	100	100	100	100	100	100
2022	100	100	100	100	100	100
2023	100	100	100	100	100	100
2024	100	100	100	100	100	100
2025	100	100	100	100	100	100
2026	100	100	100	100	100	100
2027	100	100	100	100	100	100
2028	100	100	100	100	100	100
2029	100	100	100	100	100	100

Type	Source #	Base Type		Averaged weight		RMSE	RMSE eq. 6.2
		Energy %	Weight %	10	50		
Area Under Curves	1558	508	681	45.2	28.7	8.22	
FCI	2615	581	688	46	30.3	8.05	
Area Under Curves	1558	508	681	45.2	28.7	8.22	1.01
FCI + 20 W%	2615	581	688	46	30.3	8.05	
Area Under Curves	1558	508	681	45.2	28.7	8.22	1.01

Y-102	1000	817	1010	104	
Y-103	1000	777	1110	10	
Y-104	1000	1000	1000	10	
Y-105	1000	1000	1000	10	
Y-106	1000	1000	1000	10	
Y-107	1000	1000	1000	10	
Y-108	1000	1000	1000	10	
Y-109	1000	1000	1000	10	
Y-110	1000	1000	1000	10	
Y-111	1000	1000	1000	10	
Y-112	1000	1000	1000	10	
Y-113	1000	1000	1000	10	
Y-114	1000	1000	1000	10	
Y-115	1000	1000	1000	10	
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Y-251	1000	1000	1000	10	
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Y-255	1000	1000	1000	10	
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Y-281	1000	1000	1000	10	
Y-282	1000	1000	1000	10	
Y-283	1000	1000	1000	10	
Y-284	1000	1000	1000	10	
Y-285	1000	1000	1000	10	
Y-286	1000	1000	1000	10	
Y-287	1000	1000	1000	10	
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Y-302	1000	1000	1000	10	
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Y-304	1000	1000	1000	10	
Y-305	1000	1000	1000	10	
Y-306	1000	1000	1000	10	
Y-307	1000	1000	1000	10	
Y-308	1000	1000	1000	10	
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Y-311	1000	1000	1000	10	
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Y-319	1000	1000	1000	10	
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Y-321	1000	1000	1000	10	
Y-322	1000	1000	1000	10	
Y-323	1000	1000	1000	10	
Y-324	1000	1000	1000	10	
Y-325	1000	1000	1000	10	
Y-326	1000	1000	1000	10	
Y-327	1000	1000	1000	10	
Y-328	1000	1000	1000	10	
Y-329	1000	1000	1000	10	
Y-330	1000	1000	1000	10	
Y-331	1000	1000	1000	10	
Y-332	1000	1000	1000	10	
Y-333	1000	1000	1000	10	
Y-334	1000	1000	1000	10	
Y-335	1000	1000	1000	10	
Y-336	1000	1000	1000	10	
Y-337	1000	1000	1000	10	
Y-338	1000	1000	1000	10	
Y-339	1000	1000	1000	10	
Y-3					

load exactly in the manner of a Ford car and the only necessary operation by the pilot would be to hold in a low gear until the engine had started the heavy work.

Mr. Finney here showed a set of curves embodying the structural weight of some representative airplanes and airships. These curves appear to distribute the designer's contention that the average advantage lies with the light type for small machines, and with the best type for large ones. They also seem to indicate that large flying boats should be expensive in performance to large airplanes, for while the structural weight curve of the flying boat starts at a very great dis-

contrast to the airplane, it accelerates it in medium cases, and passes it in large ones, with no sign of the curve "turning up" in the case of the largest flying boat built to date. This would indicate that the size limit for big flying boats is far from reached, whereas that of airplanes, while not necessarily in view, will probably be met first.

The difficulties in handling large airplanes are tremendous, for they require widely large runways which must have a hard surface when most big countries suitable for airplanes is of a soft nature. Flying boats, on the other hand, dispose of wheeled airplanes as long as they fly over water, and do then need the rate of climb for safety in taking off from an airplane deck. Finally, big flying boats do not present the difficulties in handling which big airplanes do.

[illegible]

New York Air Defense Stations

Owing to the reluctance of the City of New York, to sell to the Navy Department the piece of land on which Fort Greene naval air station is situated, that station is in a state of suspended animation, and the Navy has no aircraft operating here in New York. The only air defense stations near New York are Minkel Field, near Garden City, L. I., which is operated by the Army Air Service, and Midler Field, Newburgh, Station Island, the stations of the New York National Guard Army Air Corps.

With this situation in view, the American Firms and Keller Co. is making extensive alterations at its plant in Kew-Forest, N. Y., to turn it into a well equipped aircraft repair station. In addition to the existing facilities for overhauling aircraft a large landing field is being built which, in conjunction with the present fully equipped plant where planes are stored, repaired, etc., will have many advantages, and will be a strong factor in the New York branch of the Army Air Service. The alterations at the Keller Co. plant will be able to be used in its entirety.

The Army Air Service is planning this demonstration as an effort to awaken the citizens of New York to the importance of their role.

New Belgian Air Line

A new Belgian Air Line, the S.A.B.E.N.A., will shortly inaugurate an airmail service between Brussels and London, with an extension to Cologne. Later it is proposed to create a service between Antwerp, Brussels, Strasbourg and Basel, and in the Belgian Congo between Matadi and Elisabethville. The latter service will not begin to operate before 1934.

Are Huge Aircraft Carriers Worth While?

Well Known English Naval Writer Voices Warning

The following article which Meritt C. Eganter, the English novel writer contributed to the *Seaside American* of March 2012, contains interesting notes on the useful use of various sources.—EDITOR

The description published in this journal dated December last, of the changes made in the design of the battle cruiser "Leviathan" and "Boreas" to equip them for their new rôle as assault carriers, raises some questions which have been discussed in British naval circles for some time past, namely, whether it is sound policy to rush to fitting warships to issues of very large dimensions. As the arguments against the policy seriously appear to deserve consideration, it may be worth while to summarize them here.

(3) These aircraft carriers are to be decommissioned on schedule.



MWS Argus, the most important British aircraft carrier, which has a through deck for taking off and landing its most valuable air assets. Its armament is obvious, concentrated the size of the target.

[illegible]

(3) The aircraft carrier is exceedingly vulnerable, in that speeded-up armor which would not impede the fighting power of an ordinary battleship or cruiser might put the carrier out of action. If the winged-deck were haled by bombs or burning shells, even if most other machines could no longer sight on it, and the power to do this in the chief justification for building very large carriers. The sparsely deck of the "Lexington," for instance, would present as inviting mark for bombing airplanes and long-range guns, and one direct hit might lose a huge ship in the light plane, and

of the war, while at the same time took the use of various natural weapons as particularly important. It may, one must assume, have been a matter of some importance for the naval officers present at an examination to be able to give reasons for the landing on deck of airplanes after flight. There is no any performance under the most favorable conditions prevailing in peace, it would be extremely hard to accomplish in the case of a landing on deck of an airplane. The deck is at full speed, making forward movement of considerable amount under a heavy sea and half obscured by the splashes and powder fumes. The probability is, therefore, also in time of war no airplane would have been left on the deck, but it would have been thrown overboard. If it was left on the water could an opportunity assumed be missed or not?

If this view be accepted, the principal argument in favor of large flushing windows seems to have any place the airplane can be launched with ease and safety from ships of relatively

The British have two big strongholds in the "Bosnia" — an industrial city of 100,000 people and a small town of 10,000 people. But its main municipal center is the "Anglo," of 24,000 people, and it is significant that in the "Hercules," the first ship specially designed for this purpose and not converted in the other way, the Admiralty did not allow where 18,000 tons. The expansion in Europe is that the former British and 20,000 tons in the center are being taken over by the British. The British are now in the "Hercules" for the work that because it furnished the most of setting these valuable dispositions, the people and adding some soldiers in the respective services more quickly than would have been possible if entirely new ships had to be designed. Probably, also, it was easier to obtain appropriations for the "Hercules" than the half-finished ship in question that was under construction.



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